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Research Data Mangement Presentation for Proposal Writing Workshop

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Research Data Management

Proposal Writing Workshop March 17, 2017 11am - 11:30 am

- Why Manage Research Data
- What is Research Data
- What is Data Management
- What does Good Data Management Mean
- What are the Benefits of Good Data Management
- What are the Benefits of Good Data Management Planning
- The Data Management Plan
- Preparation for Writing a Data Management Plan
- Writing the Data Management Plan
- Getting Help
- Questions



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Research Data Management

Why Manage Research Data

- **Protect your data from loss** by maintaining good backups and documentation
- **Conduct research efficiently** by analyzing your data practices
- **Simplify the use and reuse of your data** through proper documentation and application of standards
- **Increase your research visibility** by publishing your datasets and documentation
- **Meet funding agency, legal and ethical requirements** for dissemination and documentation of your research
- **Preserve and provide access to your data in the long term**, allowing future scholars to build on your work

Research Data Management

Data Management Mandates

- In February 2013 the White House's Office of Science and Technology Policy issued a policy memorandum to expand access to results of federally funded research data
- Targeting Federal agencies with more than \$100M in Research and Development expenditures
- View the memorandum: https://www.whitehouse.gov/sites/default/files/microsites/ostp/ostp_public_access_memo_2013.pdf

Research Data Management

Data Management Mandates

Requiring agencies to:

- Develop plans to make the published results of federally funded research freely available to the public within one year of publication
- Researchers to better account for and manage the digital data resulting from federally funded scientific research

Research Data Management

Data Management Mandates

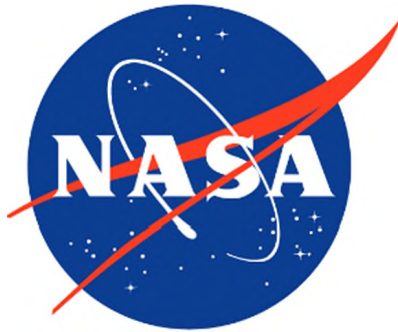
- A major component of these plans is the requirement that researchers provide a data management plan as part of a grant application

Research Data Management

Data Management Mandates



National Science Foundation
WHERE DISCOVERIES BEGIN



National Institutes of Health
Turning Discovery Into Health



NATIONAL ENDOWMENT FOR THE
Humanities

**This is not a
complete list**

Research Data Management

What is Research Data

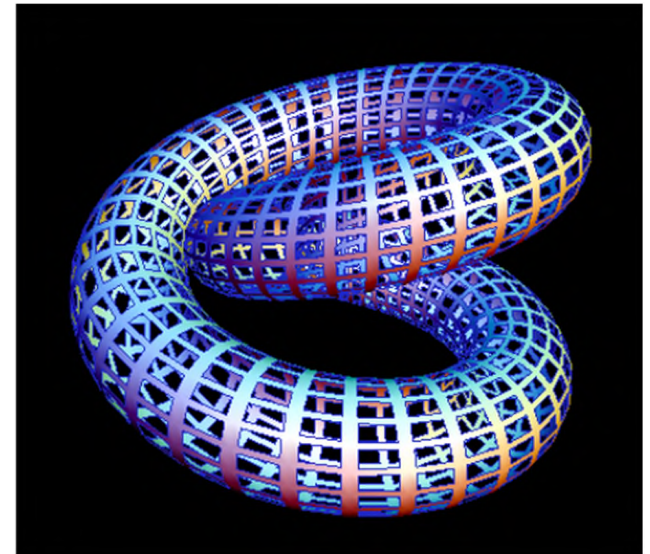
Any systematic collection of information that is used by researchers for analysis



Research Data Management

What is Research Data

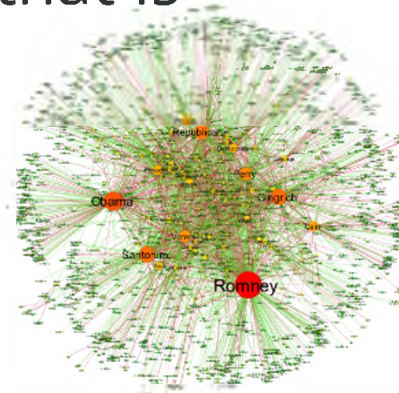
- Experimental data: data from lab equipment, often reproducible, but can be expensive. Examples:
 - gene sequences
 - chromatograms
 - toroidal magnetic field data



Research Data Management

What is Research Data

- Derived or compiled data: data that is reproducible. Examples:
 - text and data mining
 - compiled database
 - 3D models
 - data gathered from public documents



Research Data Management

What is Research Data

- Observational data: data captured in real-time, usually irreplaceable. Examples:
 - Sensor data
 - telemetry
 - survey data
 - sample data
 - neuroimages

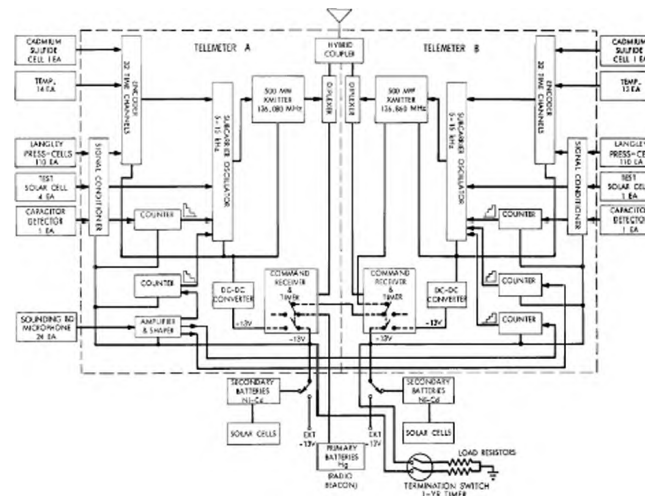
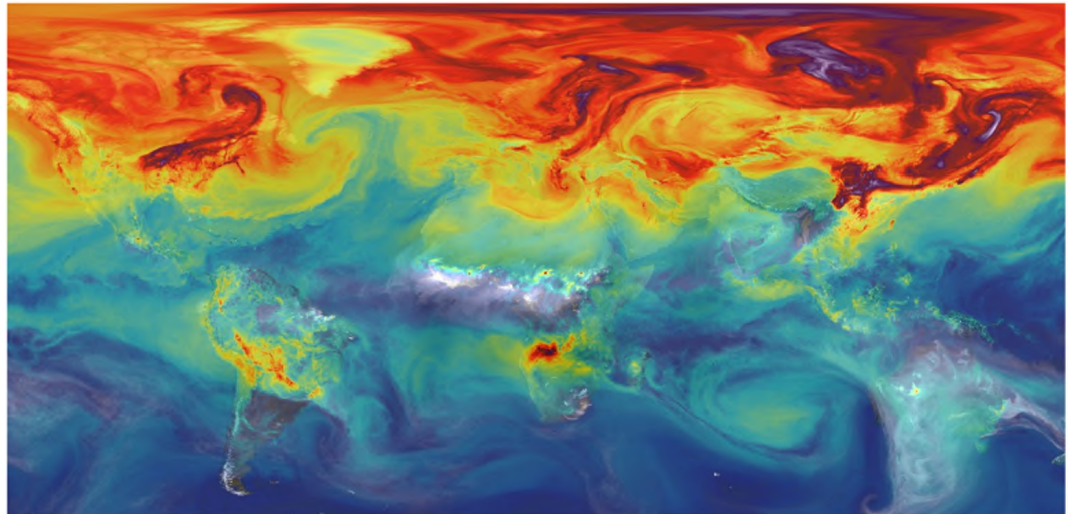


Figure 8-6: A telemetry system

Research Data Management

What is Research Data

- Simulation data: data generated from test models where model and metadata (inputs) are more important than output data. Examples:
 - climate models
 - economic models



Research Data Management

What is Research Data

- Research data can also includes video, sound, or text data, as long as it is used for systematic analysis.

Examples:

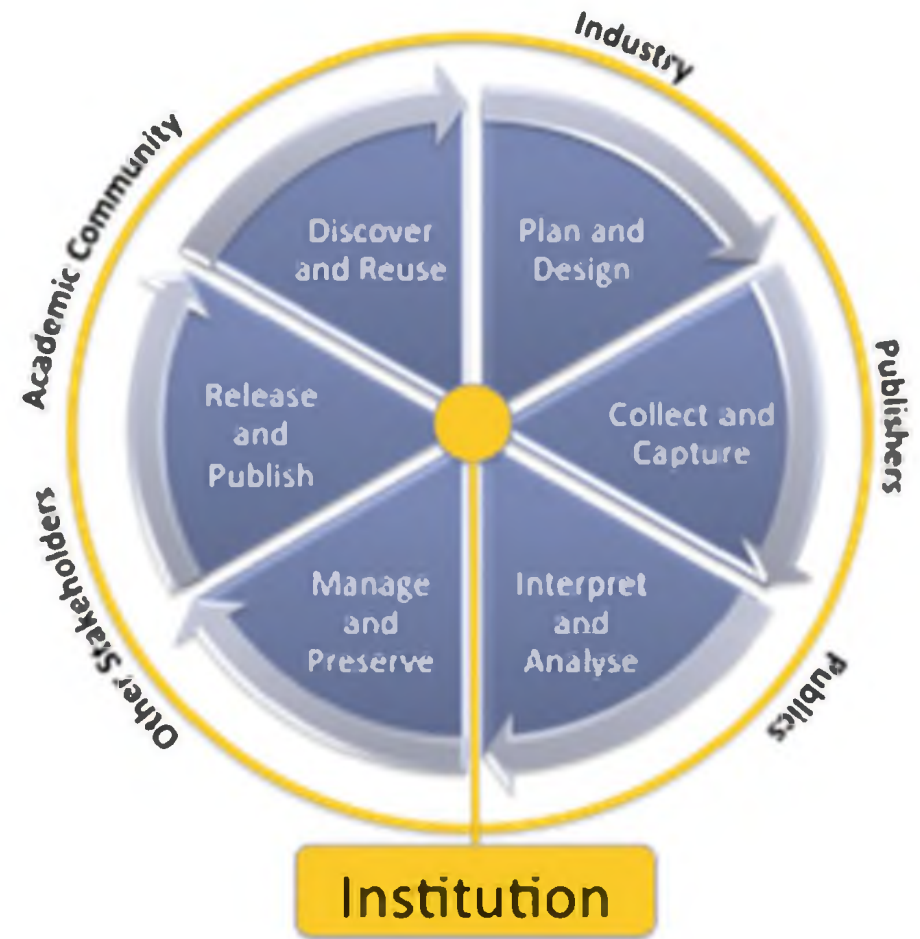
- a collection of video interviews use to gather and identify responses
- audio interviews
- written documents



Research Data Management

What is Data Management

Data management is all of the activities necessary to make research data discoverable, accessible and understandable today, tomorrow, and well into the future.



Research Data Management

What is Data Management

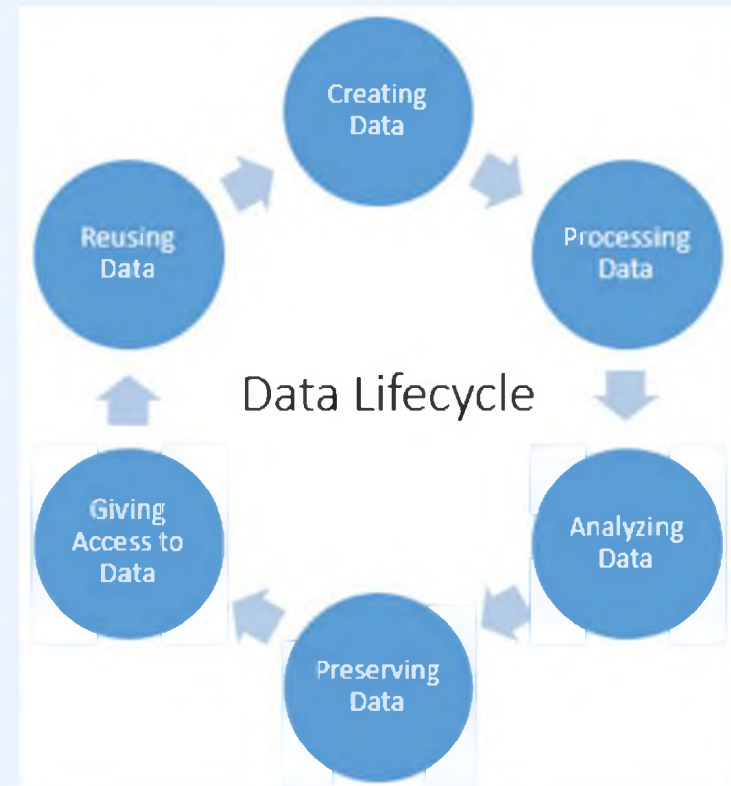
- Ensuring the safety of content (data protection, ethics, morality, etc.)
- Describing the data (via metadata) and recording its history (provenance)
- Providing or enabling appropriate access at the right time, or restricting access, as appropriate
- Transferring custody at some point, and possibly destroying



Research Data Management

What is Data Management

- Fundamental Practices
 - File Organization
 - Data Documentation
 - Reliable Backups
- Data Lifecycle
 - Digital Sustainability
 - Scholarly Communication
 - Data Publishing
 - Research Impact



Research Data Management

What Does Good Data Management Mean

Your research can be:

- Replicated and verified
- Preserved for future use
- Linked with other research products
- Shared and reused



Research Data Management

What are the Benefits of Good Data Management

- Meet funding requirements
- Increase visibility of research
- Save time and effort
- Avoid data loss
- Deal with an ever-increasing amount of data



Research Data Management

What are the Benefits of Good Data Management Planning

- Identify end goals & practical steps
- Anticipate problems and reduce their likelihood
- Recognize support needs
- Identify resource needs
- Communicate objectives
- Demonstrate your responsibility
- Meet sponsorship obligations
- Ensure access to the data
- Preserve the data



Research Data Management

The Data Management Plan

A good data management plan will describe:

- File Organization Practices
- Documentation Practices
- Backup Practices
- Data Sharing and Access Practices
- Plan/Policies for Data Re-use, re-Distribution and Production of Derivatives
- Plans/Policies for Providing Access
- Plans/Policies for Preservation



Research Data Management

The Data Management Plan

A generic NSF plan contains these sections:

- **Access to Data and Data Sharing Practices and Policies:** *Policies for access and sharing including provisions for appropriate protection of privacy, confidentiality, security, intellectual property, or other rights or requirements.*
- **Policies for Re-Use, Re-Distribution, and Production of Derivatives.**

Research Data Management

The Data Management Plan

A generic NSF plan contains these sections:

- **Products of the Research:** The *types of data*, samples, physical collections, software, curriculum materials, and other materials to be produced in the course of the project.
- **Data Formats:** The *standards to be used* for data and *metadata format* and content (where existing standards are absent or deemed inadequate, this should be documented along with any proposed solutions or remedies).

Research Data Management

The Data Management Plan

A generic NSF plan contains these sections:

- **Archiving of Data:** Plans for archiving data, samples, and other research, products, and for preservation of access to them.

Research Data Management

Preparation for Writing a Data Management Plan

Things to consider:

- What is the expected lifespan of the data?
- Besides the researcher(s) on the project, who else should be given access to the data?
- Does the dataset include any sensitive information?
- Who owns or controls the research data?
- Should any restrictions be placed on the dataset?
- How are the data stored and preserved?

Research Data Management

Preparation for Writing a Data Management Plan

Things to consider:

- How might the data be used, reused, and re-purposed?
- How is the data described and organized?
- Who are the expected and potential audiences?
- What publications or discoveries might result?
- How should the data be made accessible?

Research Data Management

Writing the Data Management Plan



Build your Data Management Plan

<https://dmptool.org/>

- Create, review, and share data management plans that meet institutional and funder requirements.
- Free and open to anyone.
- Customized to our Institution.
- Guides you through the process of creating a data management plan to meet funder requirements.
- Provides links to funder information, suggested answers, and data management resources.

Research Data Management

Getting Help

<http://scholarsmine.mst.edu>

<http://sponsoredprograms.mst.edu>

<https://owl.english.purdue.edu/owl/resource/981/1/>

Research Data Management

Questions?



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